

AMENDMENT UNDER 37 C.F.R. § 1.111  
U.S. Application No.: 09/870,676

**REMARKS**

Claims 1, 5, 6, 9-15 and 17-20 are all the claims pending in the application.

Claim 1 is amended to claim the subject matter of originally filed claim 1. The word "simultaneously," inserted by the Amendment filed 19, 2003 and unnecessary as set forth below, is deleted. No new matter is added.

The Examiner is kindly thanked for the courtesy of the personal interview conducted on April 25, 2003.

Claims 1, 5, 9-13, and 17 are rejected under 35 U.S.C. § 102(b), as being anticipated by Urbanski.

Claims 1, 5, 11 and 17 are rejected under 35 U.S.C. § 102(b), as being anticipated by Gaede.

Claims 1, 5, 9, 11, and 17 are rejected under 35 U.S.C. § 102(b), as being anticipated by Fife.

Claims 1, 5, 6, 9-15 and 17-19 and are rejected under 35 U.S.C. § 102(b), as being anticipated by Benoiton.

Claims 1, 5, 6, 9-15 and 17-19 are rejected under 35 U.S.C. § 102(b) as anticipated by Ramage et al, "A Kinetic Study of Phosphinic Carboxylic Mixed Anhydrides" J. Chem. Soc. Perkin Trans. I, pages 1617-1622 (1985) ("Ramage").

Applicants respectfully traverse the above rejections, as discussed during the Examiner interview. Applicants' invention is neither disclosed nor suggested from the cited references.

During the conference with the Examiner, it was agreed that each of the cited references discloses a method using the same order of addition of reactant components, *i.e.*, the activating

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agent is added to the carboxylic acid and organic base. In this respect, the cited references are all similar to one another and are addressed together.

None of the cited references disclose the specific order of addition in Applicants' claims, which recite that the carboxylic acid and organic base are added to the activating agent. For example, Urbanski at page 1229 discloses that benzenesulfonyl chloride was added to a mixture of carboxylic acid and tertiary amine. The carboxylic acid and tertiary amine were not added to the benzenesulfonyl chloride, as in Applicants' claims. Gaede contains a similar disclosure on page 93, which sets forth a process distinct from Applicants' claimed process. Therefore, the cited art does not anticipate Applicants' claims, and it is respectfully requested that the rejection be withdrawn.

Moreover, Applicants have provided experimental data of unexpected results which further supports patentability of Applicants' claimed invention. Before the instant invention, it was not known or suggested to add carboxylic acid and organic base to the activating agent. Previously, and as demonstrated by the cited art, the conventional method was the reverse, *i.e.* adding activating agent dropwise to a mixture of carboxylic acid and organic base. The unexpected benefit of Applicants' method is described in Table 1 on p. 45 of the specification, as well as the last paragraph of page 22 of the specification.

The experimental data provided in Table 1 on page 28 of Applicants' specification contains evidence of unexpected superiority of Applicants' invention. Comparative Example 1 is representative of the conventional method. Applicants' Example 11 is the same experiment,

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except that Applicants' claimed process was used. The 2/3 ratio for Comparative Example 1 was 21.3/78.7, as compared to 88.5/11.5 for Example 1, corresponding to Applicants' invention.

This is completely unexpected from the cited art. Urbanski, for example, states that the order of addition does not have a significant effect of the yield of the unsymmetrical anhydride, as indicated in the last two lines of the paragraph on page 1228. Thus, the cited art teaches away from Applicants' claimed invention.

The unexpected results of Applicants' invention are further discussed in the last paragraph of page 22 of the specification.

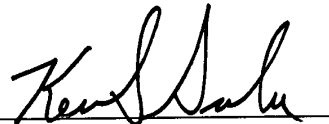
In view of the above, we note that the claim recitation added to claim 1 in the Amendment of February 19, 2003 is not necessary. Therefore, Applicants submit the present amendment returning the scope of claim 1 to its original scope. Original claim 1 does not contain the recitation of "simultaneously adding the carboxylic acid and organic base." Accordingly, Applicants' Amendment removes the recitation of "simultaneously" which is not necessary in view of the differences between the cited art and the claimed order of addition of reactant components.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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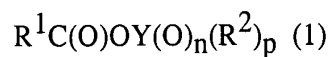
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Date: May 2, 2003

**APPENDIX**  
**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**IN THE CLAIMS:**

1. (Amended) A method for producing a mixed acid anhydride of formula (1):



wherein  $R^1$ ,  $R^2$ , Y, n and p denote the same as defined below,

which comprises [simultaneously] adding

a carboxylic acid of formula (2);



wherein  $R^1$  denotes

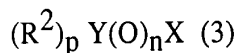
a hydrogen atom,

an optionally substituted alkyl group,

an optionally substituted aryl group, or

an optionally substituted hetero ring, and

an organic base to a solution of a carboxylic acid activating agent of formula (3);



wherein  $R^2$  denotes

an optionally substituted aliphatic hydrocarbyl group,

an optionally substituted aromatic hydrocarbyl,

an optionally substituted chain or cyclic alkoxy group, or

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an optionally substituted aryloxy group,

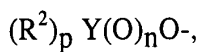
Y denotes

a carbon atom, a phosphorus atom, or a sulfur atom,

X denotes

a fluorine atom, a chlorine atom, a bromine atom, an iodine atom, a cyano

group or a group of formula:



wherein  $R^2$  is the same as defined above,

n and p are an integer of 1 or 2; and

when Y is a carbon atom, n=1 and p=1,

when Y is a phosphorous atom, n=1 and p=2, and

when Y is sulfur atom, n=2 and p=1 and  $R^2$  denotes an optionally substituted alkyl or aryl group.